CHAPTER IV
RESEARCH FINDING AND ANALYSIS

A. Description of Research Findings

To find out the difference between the students who were taught by using Joepardy game and the students who were not taught by using Joepardy game on Simple Past Tense, especially in MANPemalang the writer did an analysis of quantitative data. The data was obtained by giving test to the experimental class and control class after giving a different learning both classes.

The subjects of this research were divided into two classes. They are experimental class (X.10), control class (X. 9). Before items were given to the students, the writer gave a try out test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The writer prepared 20 items as the instrument of the test. Test was given before and after the students followed the learning process that was provided by the writer.

Before the activities were conducted, the writer determined the materials and lesson plan of learning. Learning in the experimental class used Joepardy game, while the control class without used Joepardy game.

After the data were collected, the writer analyzed it. The first analysis data is from the beginning of control class and experimental class that is taken from the pre test value. It is the normality test and homogeneity test. It is used to know that two groups are normal and have same variant. Another analysis data is from the ending of control class and experimental class. It is used to prove the truth of hypothesis that has been planned.

B. Data Analysis And Hypothesis Test

1. The Data Analysis

a. The data analysis of try out finding

This discussion covers validity, reliability, level of difficulty and discriminating power.

1) Validity of Instrument

As mentioned in chapter III, validity refers to the precise measurement of the test. In this study, item validity is used to know the index validity of the test. To know the validity of instrument, the writer used the Pearson product moment formula to analyze each item.

The following is the example of item validity computation for item number 1 and for the other items would use the same formula.

N = 21 $\sum Y = 1375$ $\left(\sum X\right)^2 = 4225$

$\sum XY = 4850$ $\sum X^2 = 325$

$\sum X = 65 \qquad \sum Y^2 = 103475$

$$r_{xy} = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{\left\{N\sum X^2 - \left(\sum X\right)^2\right\}\left\{N\sum Y^2 - \left(\sum Y\right)^2\right\}}}$$

$$r_{xy} = \frac{21(4850) - 65(1375)}{\sqrt{\{21(325) - (4225)\}\{21(103475) - (1890625)\}}}$$

$$r_{xy} = \frac{101850 - 89375}{\sqrt{(2600)(282350)}}$$

$$r_{xy} = \frac{101850 - 89375}{\sqrt{734110000}0}$$

$$r_{xy} = \frac{12475}{27094{,}464}$$

$$r_{xy} = 0{,}428$$

From the computation above, the result of computing validity of the item number 1 is 0,428. After that, the writer consulted the result to the table of r Product Moment with the number of subject (N) = 21 and significance level 5% it is 0,433. Since the result of the computation is higher than r in table, the index of validity of the item number 1 is considered to be valid.

2) Reliability of Instrument

A good test must be valid and reliable. Besides the index of validity, the writer calculated the reliability of the test using Alpha formula.

$$r_{11} = \left|\frac{k}{k-1}\right| \left|1 - \frac{\sum \sigma_i^{\ 2}}{\sigma_t^{\ 2}}\right|$$

In which:

r_{11}	= The reliability coefficient of items
$\sum \sigma_i^{\ 2}$	= Total ofvarians each score items
$\sigma_t^{\ 2}$	= Total of varians
k	=The number of item in the test

With formula varian item in the test below:

$$\sigma_i^{\ 2} = \left|\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}\right|$$

Criteria:

If $r_{11} > r_{table}$ is reliable.

The following is the example of item varians computation for item number 1 and for the other items would use the same formula.

$$\text{var} = \left| \frac{325 - \frac{4225}{21}}{21} \right|$$

$$\text{var} = \left| \frac{325 - 201{,}19}{21} \right|$$

$$\text{var} = \left| \frac{123{,}81}{21} \right|$$

Var = 5,896

$\sigma_i{}^2$ = 5,896 + 5,556 + 5,8956+ 5,896 + 5,556 + 5,896 + 5,896 + 6,236 + 5,102 + 5,102 + 4,535 + 5,102 + 4,535 + 6,122 + 5,896 + 4,535 + 5,102 + 6,112 + 5,102 + 4,535 =108,617

$$\sigma_i{}^2 = \left| \frac{\sum Y^2 - \frac{(\sum Y)^2}{N}}{N} \right|$$

$$\sigma_i{}^2 = \left| \frac{103475 - \frac{(1890625)}{21}}{21} \right|$$

$$\sigma_i{}^2 = \left| \frac{103475 - 90029{,}761}{21} \right|$$

$$\sigma_i{}^2 = \left| \frac{13445{,}239}{21} \right|$$

$$\sigma_i{}^2 = 640{,}249$$

$$r_{11} = \left| \frac{k}{k-1} \right| \left| 1 - \frac{\sum \sigma_i{}^2}{\sigma_t{}^2} \right|$$

$$r_{11} = \left|\frac{21}{21-1}\right|\left|1-\frac{108,617}{640,249}\right|$$

$$r_{11} = (1,05)(1 - 0,169)$$

$$r_{11} = (1,05)(0,831)$$

$$r_{11} = 0,872$$

From the computation above, it is found out that r_{11} (the total of reliability test) is 0,872, whereas the number of subjects is 21and the critical value for r-table with significance level 5% is 0,433. Thus, the value resulted from the computation is higher than its critical value. It could be concluded that the instrument used in this research is reliable.

3) Degree of the Test Difficulty

The following computation of the level difficulty for the item number 1 and for the other items would use the same formula.

Degree of the Test Difficulty

$$= \frac{\text{Mean}}{\text{maksimum score that decided}}$$

In which,

$$Mean = \frac{\text{the number of score test student in each certain item}}{\text{the number of test student}}$$

Method to interpret degree of the test difficulty below:

Table4

The Interpretation of Degree of the Test Difficulty

Bigness of DD	Interpretation
Less of 0,30	Very difficult
0,30-0,70	Medium
More than 0,70	Easy

The following is the example of item degree of the test difficulty computation for item number 1 and for the other items used the same way.

Table 5

Table of Degree of the Test Difficulty Computation for Item Number 1:

No	Code	X
1	TO-16	5
2	TO-15	5
3	TO-12	0
4	TO-18	5
5	TO-14	5
6	TO-4	5
7	TO-5	5
8	TO-17	5
9	TO-7	0
10	TO-6	5
11	TO-20	5
12	TO-9	0

13	TO-10	0
14	TO-1	5
15	TO-19	5
16	TO-8	0
17	TO-2	5
18	TO-11	0
19	TO-3	5
20	TO-21	0
21	TO-13	0
Sum	**21**	**65**

$$Mean = \frac{\text{the number of score test student in each certain item}}{\text{the number of test student}}$$

$$Mean = \frac{65}{21}$$

Mean = 3,09

$$D = \frac{\text{Mean}}{\text{Maximun Score}}$$

$$D = \frac{3,09}{5}$$

= 0,618

From the computation above, the question number 1 can be said as the easy category, because the calculation result of the item number 1 is in the interval 0,618<D $\leq$ 1

4) Discriminating Power

The formula that used in discriminating power computation as follow:

$$DP = \frac{MA - MB}{Maximum\ Score}$$

In which:

$MA = \frac{\sum x_A}{N_A}$ and $MB = \frac{\sum x_B}{N_B}$

In which:

DP : Discriminating Power

MA : The average from upper group

MB : The average from low group

N_A : The number of student in upper group

N_B : The number of student in low group

The way to interpret discriminating power according to Anas Sudjiono as follow:

Table6
Interpretation of Discriminating Power

Bigness of DP	**Classification**
Less of 0,20	*Poor*
0,20 – 0,40	*Satisfactory*
0,40 – 0,70	*Good*
0,70 – 1,00	*Excellent*
Negatif sign	Thrown item

The following is the computation of the discriminating power for item number 1, and for other items would use the same way.

Before computed using the formula, the data divided into 2 (group). They were upper group and low group.

Table 7

The Table of the Gathered Score of Item Number 1

Upper Group			Low Group		
No	Code	Score	No	Code	Score
1	TO-20	5	11	TO-7	5
2	TO-8	5	12	TO-15	0
3	TO-19	0	13	TO-18	0
4	TO-2	5	14	TO-21	5
5	TO-3	5	15	TO-14	5
6	TO-12	5	16	TO-13	0
7	TO-16	5	17	TO-10	5
8	TO-17	5	18	TO-6	0
9	TO-1	0	19	TO-11	5
10	TO-4	5	20	TO-5	0
			21	TO-9	0
Sum	10	40	Sum	11	25

$$MA = \frac{\sum X_A}{N_A} \qquad MA = \frac{40}{10} MA = 4$$

$$MB = \frac{\sum X_B}{N_B} MB = \frac{25}{11} MB = 2{,}27$$

$$DP = \frac{MA - MB}{Maximum\ Score}$$

$$DP = \frac{4 - 2{,}27}{5}$$

$$DP = 0{,}346$$

So, the discriminating power for item number 1 is Satisfactory.

b. The data analysis of pre test value of the experimental class and the control class

Table 8

The list of Pre-test Value of the Experimental and Control Class

No	Experimental Class				Control Class			
	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E-16	85	24,52	601,417	C-6	85	25,24	636,961
2	E-17	85	19,52	601,417	C-16	75	15,24	232,200
3	E-9	80	14,52	381,179	C-10	75	15,24	232,200
4	E-15	70	9,52	90,703	C-5	75	15,24	232,200
5	E-4	70	9,52	90,703	C-15	70	10,24	104,819
6	E-10	70	9,52	90,703	C-11	70	10,24	104,819
7	E-19	70	9,52	90,703	C-1	70	10,24	104,819
8	E-7	65	4,52	20,465	C-13	70	10,24	104,819
9	E-18	60	-0,48	0,227	C-17	65	5,24	27,438
10	E-14	60	-0,48	0,227	C-7	60	0,24	0,057
11	E-8	60	-0,48	0,227	C-9	60	0,24	0,057
12	E-5	60	-0,48	0,227	C-20	60	0,24	0,057

13	E-1	60	-0,48	0,227	C-18	55	-4,76	22,676
14	E-3	60	-0,48	0,227	C-21	55	-4,76	22,676
15	E-6	55	-5,48	29,989	C-19	55	-4,76	22,676
16	E-12	50	-10,48	109,751	C-2	50	-9,76	95,295
17	E-11	50	-10,48	109,751	C-14	50	-9,76	95,295
18	E-21	45	-15,48	239,512	C-8	45	-14,76	217,914
19	E-20	40	-20,48	419,274	C-12	45	-14,76	217,914
20	E-2	40	-20,48	419,274	C-3	35	-24,76	613,152
21	E-13	35	-25,48	649,036	C-4	30	-29,76	885,771
	$\sum$	1270	0.00	4142,499	$\sum$	1255	0.00	4172,501
	$\bar{x}$	60,48			$\bar{x}$	59,76		

1) The Normality Pre-test of the Experimental Class

The normality test is used to know whether the data obtained is normally distributed or not. Based on the table above, the normality test:

Hypothesis:

Ho: The distribution list is normal.

Ha: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 21 Length of the class = 9

Maximum score = 85 $\sum x$ = 1270

Minimum score = 35 $\bar{x}$ = 60,48

K / Number of class = 7 Range = 50

Table 9
Frequency Distribution

Class	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
30– 38	1	34	1156	34	1156
39–47	3	43	1849	129	5547
48–56	3	52	2704	156	8112
57–65	7	61	3721	427	26047
66–74	4	70	4900	280	19600
75–83	1	79	6241	79	6241
84–92	2	88	7744	176	15488
$\sum$	21			1281	82191

$$\overline{X} = \frac{\sum fixi}{\sum fi} = \frac{1281}{21} = 61$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{21*82191-(1281)^2}{21(21-1)}$$

s^2 = 202,5 s =14,23

Table 10

Normality Pre test of the Experimental Class

No	Kelas	Bk	Z_1	$P(Z_i)$	Luas daerah	O_i	E_i	$(O_i-E_i)^2/E_i$
		29,5	-2,37	0,4066				
1	30 - 38				0,1043	1	2,503	0,903
		38,5	-1,68	0,3023				
2	39 - 47				0,1580	3	3,792	0,165

		47,5	-0,99	0,1443				
3	48 - 56				0,1841	3	4,418	0,455
		56,5	-0,30	0,0398				
4	57 - 65				0,1759	7	4,222	1,829
		65,5	0,38	0,2157				
5	66 - 74				0,1374	4	3,298	0,150
		74,5	1,07	0,3531				
6	75 - 83				0,0826	1	1,982	0,487
		83,5	1,76	0,4357				
7	84 - 92				0,0415	2	0,996	1,012
		92,5	2,45	0,4772				
X^2								1,134

With α = 5% and dk = 7-3=3, from the chi-square distribution table, obtained X^2_{table} = 9.488. Because X^2_{count} is lower than X^2_{table} (1,134<9.488). So, the distribution list is normal.

2) The Normality Pre-test of the Control Class

Hypothesis:

Ho: The distribution list is normal.

Ha: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 85 N = 21

Minimum score = 30 Range = 55

K / Number of class = 7 $\bar{x}$ = 59,76

Length of the class = 9 $\sum x$ = 1255

Table 11
Frequency Distribution

Class	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
30– 38	2	34	1156	68	2312
39– 47	2	43	1849	86	3698
48– 56	5	52	2704	260	13520
57– 65	4	61	3721	244	14884
66– 74	4	70	4900	280	19600
75– 83	3	79	6241	237	18723
84– 92	1	88	7744	88	7744
$\sum$	21			1263	80481

$$\bar{X} = \frac{\sum fixi}{\sum fi} = \frac{1263}{21} = 60,14$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{21*80481-(1263)^2}{21(21-1)}$$

s^2 = 226,02 s = 15,03

Table 12

Normality Pre test of the Control Class

No	Kelas	Bk	Z_1	$P(Z_i)$	Luas daerah	O_i	E_i	$(O_i-E_i)^2/E_i$
		29,5	-2,33	0,4066				
1	30 - 38				0,1043	2	2,503	0,101
		38,5	-1,64	0,3023				

2	39 - 47				0,1580	2	3,792	0,847
		47,5	-0,95	0,1443				
3	48 - 56				0,1841	5	4,418	0,077
		56,5	-0,25	0,0398				
4	57 - 65				0,1759	4	4,222	0,012
		65,5	0,44	0,2157				
5	66 - 74				0,1374	4	3,298	0,150
		74,5	1,14	0,3531				
6	75 - 83				0,0826	3	1,982	0,522
		83,5	1,83	0,4357				
7	84 - 92				0,0415	1	0,996	0,000
		92,5	2,52	0,4772				
X^2								1,325

With α = 5% and dk = 7-3=4, from the chi-square distribution table, obtained X_{table} = 9.488. Because X^2_{count} is lower than X^2_{table} (1,325<9.488). So, the distribution list is normal.

3) The Homogeneity Pre-Test of the Experimental Class

Hypothesis :

$$H_o : \sigma_1^2 = \sigma_2^2$$

$$H_A : \sigma_1^2 \neq \sigma_2^2$$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ variant}{smallest\ variant}$$

The Data of the research:

$\sum(x_i - \overline{x})_1^2 = 4142{,}499$ n$_1$ = 21

$\sum(x_i - \overline{x})_2^2 = 4172{,}501$ n$_2$ = 21

$$\sigma_1^2 = S_1^{\ 2} = \frac{\sum(x-\bar{x})^2}{n_1 - 1} = \frac{4142{,}499}{21} = 197{,}261$$

$$\sigma_2^2 = S_2^{\ 2} = \frac{\sum(x-\bar{x})^2}{n_2 - 1} = \frac{4172{,}501}{21} = 198{,}690$$

Biggest variant (Bv) = 198,690

Smallest variant (Sv) = 197,476

Based on the formula, it is obtained:

$$F = \frac{198{,}690}{197{,}261} = 1{,}007$$

With α = 5% and dk = (21-1 = 20): (21-1 = 20), obtained F_{table} = 2.02. Because F_{count} is lower than F_{table} (1.007<2.02). So, Ho is accepted and the two groups have same variant / **homogeneous.**

4) The average similarity Test ofPre-Test of Experimental and Control Classes

Hypothesis:

Ho = $\mu_1 \leq \mu_2$

Ha = μ1 >μ2

Test of hypothesis:

Based on the computation of the homogeneity test, the experimental class and control class have same variant. So, the t-test formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x_1}$ = 60,48 $\overline{x_2}$ = 59,76

S_1^2 = 197,261 S_1^2 = 198,690

n_1 = 21 n_2 = 21

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(21-1)197{,}261 + (21-1)198{,}690}{21+21-2}} = \sqrt{\frac{7919{,}02}{40}} = 14{,}07$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{60,48 - 59,76}{14,07\sqrt{\frac{1}{21} + \frac{1}{21}}} = \frac{0,72}{4,34} = 0,164$$

With α = 5% and dk = 21 + 21 – 2 = 40, obtained t_{table} =1.68Because t_{count} is lower than t_{table} (0.164< 1.68). So, Ho is accepted and there is no difference of the pre test average value from both groups.

c. The Data Analysis of Post-test Scores in Experimental Class and Control Class.

Table 13
The Value of the Post Test of the Experimental and Control Class

No	Experimental Class				Control Class			
	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E-16	100	16,19	104,395	C-6	95	22,38	500,907
2	E-15	100	16,19	27,221	C-10	90	17,38	302,098
3	E-17	95	11,19	27,221	C-5	85	12,38	153,288
4	E-12	95	11,19	27,221	C-8	85	12,38	153,288
5	E-7	95	11,19	27,221	C-15	85	12,38	153,288
6	E-9	90	6,19	27,221	C-7	85	12,38	153,288
7	E-18	90	6,19	27,221	C-9	80	7,38	54,478
8	E-8	90	6,19	27,221	C-20	75	2,38	5,669
9	E-10	90	6,19	27,221	C-16	75	2,38	5,669

10	E-2	85	1,19	27,221	C-1	70	-2,62	6,859
11	E-20	85	1,19	0,047	C-2	70	-2,62	6,859
12	E-14	85	1,19	0,047	C-11	70	-2,62	6,859
13	E-19	85	1,19	0,047	C-17	70	-2,62	6,859
14	E-1	80	-3,81	0,047	C-3	65	-7,62	58,050
15	E-4	80	-3,81	0,047	C-12	65	-7,62	58,050
16	E-3	75	-8,81	0,047	C-13	65	-7,62	58,050
17	E-6	70	-13,81	0,047	C-18	65	-7,62	58,050
18	E-21	70	-13,81	22,873	C-4	60	-12,62	159,240
19	E-5	70	-13,81	22,873	C-21	60	-12,62	159,240
20	E-11	65	-18,81	22,873	C-14	55	-17,62	310,431
21	E-13	65	-18,81	95,699	C-19	55	-17,62	310,431
	$\sum$ $\bar{x}$	1760 83,81	0.00	2567,499	$\sum$ $\bar{x}$	1525 72,62	0.00	2814,999

1) The Normality Post-Test of the Experimental Class

Based on the table above, the normality test:

Hypothesis :

Ho : The distribution list is normal.

Ha : The distribution list is not normal.

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 100 N = 21

Minimum score = 65 Range = 35

K / Number of class = 6 $\bar{x}$ = 83,81

Length of the class = 6 $\sum x$ = 1760

Table 14
Frequency Distribution

Class	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
65 – 70	5	67,5	4556,25	337,5	22781,25
71 – 76	1	73,5	5402,25	73,5	5402,25
77 – 82	2	79,5	6320,25	159	12640,5
83 – 88	4	85,5	7310,25	342	29241
89 – 94	4	91,5	8372,25	366	33489
95 – 100	5	97,5	9506,25	487,5	47531,25
Sum	21			1765,5	151085,25

$$\bar{X} = \frac{\sum fixi}{\sum fi} = \frac{1765,5}{21} = 84,071$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{21*151085,25 - (1765,5)^2}{21(21-1)}$$

s^2 = 132,857 s = 11,526

Table 15

Normality Post test of the Experimental Class

No	Kelas	Bk	Z_1	$P(Z_i)$	Luas daerah	O_i	E_i	$(O_i-E_i)^2/E_i$
		64,5	-1,83	0,4998				
1	65 - 70				0,0033	5	0,076	319,457
		70,5	-1,26	0,4965				
2	71 - 76				0,0279	1	0,642	0,200

		76,5	-0,69	0,4686				
3	77 - 82				0,1225	2	2,818	0,237
		82,5	-0,12	0,3461				
4	83 - 88				0,2747	4	6,318	0,851
		88,5	0,44	0,0714				
5	89 - 94				0,3168	4	7,286	1,482
		94,5	1,01	0,2454				
6	95 - 100				0,1878	5	4,319	0,107
		100,5	1,58	0,4332				
x^2								7,075

With α = 5% and dk =6-3 =3, from the chi-square distribution table, obtained X^2_{table} =7.815. Because X^2_{count} is lower than X^2_{table} (7,075<7.815). So, the distribution list is normal

2) The Normality Post-Test of the Control Class

Hypothesis:

Ho : The distribution list is normal

Ha : The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 95 $\bar{x}$ =72,62

Minimum score = 55 $\sum x$ = 1525

K / Number of class= 7 Length of the class = 6

N = 21 Range = 40

Table 16
Frequency Distribution

Class	***f_i***	***X_i***	***X_i^2***	***$f_i.X_i$***	***$f_i.X_i^2$***
55 – 60	4	57,5	3306,25	230	13225
61 – 66	4	63,5	4032,25	254	16129
67 – 72	4	69,5	4830,25	278	19321
73 – 78	2	75,5	5700,25	151	11400,5
79 – 84	1	81,5	6642,25	81,5	6642,25
85 – 90	5	87,5	7656,25	437,5	38281,25
91 – 96	1	93,5	8742,25	93,5	8742,25
Sum	21			1525,5	113741,25

$$\overline{X} = \frac{\sum fixi}{\sum fi} = \frac{1525,5}{21} = 72,642$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{21 * 113741,25 - (1525,5)^2}{21(21-1)}$$

$s^2 = 146,228$ s = 12,092

Table 17
Normality Post test of the Control Class

No	Kelas	Bk	Z_1	$P(Z_i)$	Luas daerah	O_i	E_i	$(O_i\text{-}E_i)^2/E_i$
		54,5	-1,68	0,4940				
1	55 - 60				0,0202	4	0,485	25,488
		60,5	-1,12	0,4738				
2	61 - 66				0,0591	4	1,418	4,699

		66,5	-0,57	0,4147				
3	67 - 72				0,1237	4	2,969	0,358
		72,5	-0,01	0,2910				
4	73 - 78				0,1962	2	4,709	1,558
		78,5	0,55	0,0948				
5	79 - 84				0,2241	1	5,378	3,564
		84,5	1,10	0,1293				
6	85 - 90				0,184	5	4,416	0,077
		90,5	1,66	0,3133				
7	91 - 96				0,1146	1	2,750	1,114
		96,5	2,21	0,4279				
x^2								5,793

With α = 5% and dk =7-3 =4, from the chi-square distribution table, obtained X^2_{table} =9.488. Because X^2_{count} is lower than X^2_{table} (5,793<9.488). So, the distribution list is normal.

3) The Homogeneity Post-Test of the Experimental Class

Hypothesis :

$$H_o : \sigma_1^2 = \sigma_2^2$$
$$H_A : \sigma_1^2 \neq \sigma_2^2$$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}iant}{smallest\ \text{var}iant}$$

The data of the research:

$$\sum (x_i - \bar{x})_1^2 = 2567{,}499 \qquad n_1 = 21$$

$$\sum (x_i - \bar{x})_2^2 = 2814{,}999 \qquad n_2 = 21$$

$$S_1^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_1 - 1} = \frac{2567{,}499}{21} = 122{,}261$$

$$S_2^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_2 - 1} = \frac{2814{,}999}{21} = 134{,}047$$

Biggest variant (Bv) =127,337

Smallest variant (Sv) = 116,439

Based on the formula, it is obtained:

$$F = \frac{134{,}047}{122{,}261} = 1{,}09$$

With α = 5% and dk = (21-1=20): (21–1=20), obtained F_{table} = 2.02. Because F_{count} is lower than F_{table} (1.09<2.02). So, Ho is accepted and the two groups have same variant/ **homogeneous.**

2. The Hypothesis Test

The hypotheses in this research is there is a significant difference in Simple Past Tense achievement score between students taught using Snowball Throwing Method and those taught without using Snowball Throwing Method.

In this research, because $\sigma_1^2 = \sigma_2^2$ (has same variant), the t-test formula is as follows:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x_1}$	= 83,81	$\overline{x_2}$	= 72,86
S_1^2	= 122,261	S_1^2	= 134,047
n_1	= 21	n_1	= 21

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(21-1)122{,}261 + (21-1)134{,}047}{21 + 21 - 2}} = \sqrt{\frac{5126{,}16}{40}} = 11{,}32$$

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$t = \frac{83{,}81 - 72{,}62}{11{,}32\sqrt{\frac{1}{21} + \frac{1}{21}}} = 3{,}203$$

From the computation above, the t-table is 1.68by 5% alpha level of significance and dk = 21+21-2= 40. T-value was 3,203. So, the t-value was higher than the critical value on the table (3,203>1.68).

From the result, it can be concluded that there is a significant difference in Jeopardy Game Methodachievement between students were taught by using Jeopardy Game Methodand those were not taught by using Jeopardy Game Method.The hypothesis is accepted.

C. Discussion of The Research Findings

1. The score of Pre test

   Based on the calculations of normality and homogeneity test from class X.10 as the experimental class and class X.9 as the control class is normal distribution and homogeneous.

2. The score of post test

   The result of the research shows that the experimental class (the students who were taught using Jeopardy Game Method) has the mean value 83,81. Meanwhile, the control class (the students who were taught without using Jeopardy Game Method) has the mean value 72,62. It can be said that the Simple Past Tense achievement of experimental class is higher than the control class.

On the other hand, the test of hypothesis using t-test formula shows the value of the t-test is higher than the critical value, $t_{count} > t_{table}$ (t_{count} higher than t_{table}). The value of t-test is 3,203, while the critical value on $t_{s0,05}$ is 1.68.It means that there is a significant difference of the Simple Past Tense achievement between students weretaught using Jeopardy Game Method and those were taught without Jeopardy Game Method. In this case, the use of Snowball Throwing Methodis necessary needed in teaching Simple Past Tense.

D. Limitation of The Research

The writer realizes that this research had not been done optimally. There were constraints and obstacles faced during the research process. Some limitations of this research are:

1. The research is limited at MAN Pemalang. If the population which is involved is more, the result will be more general.
2. The use of instrument in questionaire or test to know the students' response is invalid because there was no theoretical based in composing the instruments. This instrument results in invalid conclution of students' response.

Considering all those limitations, there is a need to do more research about teaching Simple Past Tense using Snowball Throwing Method. So that, the more optimal result will be gained.